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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/543,135	07/25/2005	Masakatsu Maruyama	KOBE.0076	4372

38327 7590 01/23/2008

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EXAMINER	
RAYMOND, BRITTANY L	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
01/23/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/543,135	MARUYAMA ET AL.	
	Examiner	Art Unit	
	Brittany Raymond	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 November 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) *1-4 and 7* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5,6 and 8-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 November 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Claims 5, 6 and 8-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gronbeck (U.S. Patent 6803171).

Gronbeck discloses a photoimageable composition and a process for its use comprising: coating the photoimageable composition onto a substrate, drying the composition by heating, imaging the composition through a mask, performing a post exposure bake, developing the patterned composition, and performing a final bake step to remove solvent (Column 24, Line 20-Column 25, Line 13), as recited in claims 5, 12 and 13 of the present invention. Gronbeck also discloses that photoimageable compositions may by used as dielectric materials in the manufacture of electronic devices and that the dielectric materials can include porogens so that pores and voids

form when the porogens are removed from the composition (Column 26, Lines 25-35), as recited in claims 5 and 12 of the present invention. It would be known by one of ordinary skill in the art that this can be done by heating. Gronbeck states that the photoimageable composition can be exposed with ultraviolet, visible, e-beam, and x-ray radiation sources (Column 23, Lines 32-37), as recited in claim 6 of the present invention. Gronbeck also states that the photoimageable composition can comprise silsesquioxane-containing polymers (Column 3, Lines 22-26), photoacid generators (Column 17, Lines 12-15), and surfactants (Column 22, Lines 37-42), as recited in claims 6, 8-11 and 14-18 of the present invention.

Gronbeck fails to disclose that a second layer of the photoimageable composition is placed on top of the imaged first layer, and a description of the dielectric line between two conductive plates.

Gronbeck discloses that the process discussed above can be used to manufacture electronic devices, such as integrated circuits (Column 26, Lines 25-28), which would be known by one of ordinary skill in the art to be able to have a dielectric section between two conductive plates, said dielectric section having a width smaller than that of the conductive plates, as recited in claims 5 and 12 of the present invention. Gronbeck also discloses that the photoimageable compositions can be used in bilayer photoresist systems (Column 23, Lines 5-7). Therefore, after processing one layer of the photoimageable layer, a second layer could be placed over the first, as recited in claim 12 of the present invention. Gronbeck states that during development, the exposed areas become less soluble (Column 24, Lines 52-56). This shows that the

composition is negative working and the pattern formed from the mask would have a higher dielectric constant than the areas surrounding the patterning that were not exposed, as recited in claims 5 and 12 of the present invention. Gronbeck also states that the composition may be developed, which shows that it does not have to be and both exposed and unexposed portions can remain, as recited in the claims.

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to have used a second layer of the dielectric composition, as suggested by Gronbeck because Gronbeck teaches that the composition can be a part of a bilayer photoresist, which shows that it is compatible with similar organic films.

Response to Arguments

3. Applicant's amendments have overcome the objection to the drawings that was presented in the last Office Action. Examiner has withdrawn the objection.

4. Applicant's arguments filed 11/1/2007 have been fully considered but they are not persuasive.

Applicant argues that Gronbeck does not show or suggest that a part of a dielectric film is exposed to a radiation source to differentiate formation of crosslinks in the material in one part and the other part of the film, and that porosity in one part is differentiated from the porosity in the other part in the same film. Gronbeck teaches that a photoimageable composition is imaged through a mask in order to form a pattern in the composition. Gronbeck also teaches that the composition may be positive or negative acting. Therefore, after exposure either the exposed or unexposed part of the composition will be more soluble while the other part will be crosslinked so as not to be

removed during further processing. If the photoimageable composition is used as a dielectric material containing porogens, when the porogens are removed after exposure, it would be obvious to one of ordinary skill in the art that the porosity of the exposed part will be different from that of the unexposed part because one part is crosslinked while the other is not.

Applicant also argues that Gronbeck does not show or suggest that the dielectric strip is surrounded by a medium of which an electric constant is lower than that of the dielectric strip. Gronbeck teaches that the photoimageable composition may be developed after exposure. If the composition is not developed then the composition will remain around the dielectric strip which has been exposed and after the porogen has been removed, the surrounding portion will have a dielectric constant different from that of the exposed dielectric strip portion. Gronbeck also discloses that the photoimageable composition can be used in a bilayer process. If the first photoimageable composition is developed after exposure, it would be obvious to one of ordinary skill in the art that a second film of the same or similar composition can be placed over the exposed film. Since the first film has been through an exposure process and the second film has not, one film will be crosslinked more than the other and after the porogen has been removed from the films, one film will have a greater porosity or lower dielectric constant than the other.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brittany Raymond whose telephone number is 571-272-6545. The examiner can normally be reached on Monday through Friday, 8:30 a.m. - 5:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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MARK F. HUFF
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